

A characterization of maximin: corrigendum

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Bosmans and Ooghe (2013, p. 155) incorrectly state that the axioms in their theorem are independent. In fact, anonymity is redundant. The theorem may therefore be strengthened as follows.

Theorem. *A quasi-ordering R on \mathbb{R}^n satisfies continuity, weak Pareto and weak Hammond equity if and only if it is maximin.*

Proof. Let R be a quasi-ordering on \mathbb{R}^n that satisfies continuity, weak Pareto and weak Hammond equity. Consider two utility vectors $u, v \in \mathbb{R}^n$.

First, we have to show that $u_{(1)} > v_{(1)}$ implies uPv . Let $i \in N$ be such that $v_i = v_{(1)}$. Construct vectors $w, z \in \mathbb{R}^n$ such that

$$\begin{aligned} v_i < w_i < z_i < z_{(2)} = z_{(3)} = \dots = z_{(n)} \\ < u_{(1)} \leq \max(u_{(n)}, v_{(n)}) < w_{(2)} = w_{(3)} = \dots = w_{(n)}. \end{aligned}$$

By weak Pareto, we have uPz and wPv . By weak Hammond equity, we have zRw . Hence, we obtain uPv using transitivity.

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Second, we have to show that $u_{(1)} = v_{(1)}$ implies uIv . This follows from part (ii) of the proof in Bosmans and Ooghe (2013, p. 155). \square

The standard Hammond equity axiom is stronger than weak Hammond equity (given transitivity). Hence, contrary to what Bosmans and Ooghe (2013, footnote 9) state, Miyagishima's (2010) claim that maximin is the only quasi-ordering satisfying continuity, weak Pareto and Hammond equity is correct.

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References

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